

Prescott National Forest Land Management Plan

Socioeconomic Resource Report

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for:
Prescott National Forest

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Introduction

The existing Prescott National Forest Plan is at the end of its intended lifecycle (the current plan was approved in 1987). The Forest Plan is being revised in accordance with the 1982 National Forest System Land and Resource Management Planning Rule (1982 rule). This report provides social and economic analysis, in partial fulfillment of the Environmental Impact Statement (EIS) component of the 1982 rule.

The Prescott National Forest lands are almost exclusively in Yavapai County, Arizona (a small percentage of the Forest extends into Coconino County). Using demographic and economic data from the U.S. Census Bureau, the relevant impact area for the Forest has been defined as Yavapai County. Due to the size of Coconino County and the very small percentage of the county that contains Prescott NF lands, Coconino County will not be considered in this analysis. The inclusion of the county could potentially skew and/or mask important consequences of Forest management. The Coconino Forest Plan Revision will address impacts from Forest management changes on the social and economic conditions in Coconino County.

Affected Environment

Existing social and economic conditions are necessary to establish the baseline from which to estimate potential consequences of Forest management actions. The proceeding section analyzes the current conditions and trends related to the social and economic environment of the planning area, including: population and demographic changes, potential environmental justice populations, employment and income conditions, and the Forest's contribution to the local economy.

Population and Demographics

Population Growth

Yavapai County is home to 215,686 people (U.S. Census Bureau, 2009). Table 1 displays population and growth rates for the county, state, and nation. Arizona and Yavapai County have experienced rapid population growth during the past two decades. Indeed, the population of Yavapai County has doubled since 1990. The national growth rate during the same period was more moderate, but still reveals substantial gains in population since 1990.

Table 1. Population Growth, 1990-2009.

	<i>1990</i>	<i>2000</i>	<i>% Growth, 1990-2000</i>	<i>2009</i>	<i>% Growth, 2000-2009</i>
<i>Yavapai County</i>	107,714	167,517	55.5%	215,686	28.8%
<i>Arizona</i>	3,665,228	5,130,632	40.0%	6,595,778	28.6%
<i>United States</i>	248,709,873	281,421,906	13.2%	307,006,550	9.1%

Source: U.S. Census Bureau, 1990 and 2000 Census, 2009 Population Estimates

Rapid population growth may signal expanding economic opportunities and/or desirable amenities. Much of Yavapai County is occupied by protected federal lands. National Forest System and Bureau of Land Management (BLM) lands provide natural amenities for area residents.

Population Density

Population density can serve as an indicator of a number of socioeconomic factors of interest – urbanization, availability of open space, socioeconomic diversity, and civic infrastructure (Horne and Hayes, 1999). More densely populated areas are generally more urban, diverse, and offer better access to infrastructure. In contrast, less densely populated areas provide more open space, which may offer natural amenity values to residents and visitors.

Despite the doubling of population in Yavapai County since 1990, the number of people per square mile remains quite low relative to Arizona and the US. This finding suggests that most of the county remains quite rural. Low population density in Yavapai County also points to high levels of public ownership: approximately three-quarters of the land in Yavapai County is publicly owned and managed. The Forest Service (parts of the Prescott, Coconino, and Tonto National Forests), the state of Arizona, and the BLM are the largest public land holders. Consequently, less than 25 percent of the land in Yavapai County is available for residential and commercial occupation (Arizona Department of Commerce, 2008).

Table 2. Population Density in County, State, and Nation.

	<i>Population Density (Population/Land Area)</i>
<i>Yavapai County</i>	26.6
<i>Arizona</i>	58.0
<i>United States</i>	86.8

Source: U.S. Census Bureau, 2009

The largest cities/communities in Yavapai County are Prescott (43,230), Prescott Valley (38,962), and Chino Valley (13,069) (Arizona Department of Commerce, 2008). Much of the county's population is concentrated near Prescott, which suggests that the city provides the commercial and cultural center of the county. The economic and social environment and opportunities near Prescott, therefore, are likely to be very different than in rural areas of the county. Bagdad (1,578), for instance, is two hours from the nearest city (Bagdad is approximately equidistant from Prescott, Kingman, and the northern suburbs of Phoenix).

Age and Gender

The median age in Yavapai County exceeds the median age in both the state and the nation by nearly a decade. The high median age in Yavapai County is likely caused by a large retiree population. Retiree populations are systematically different than populations composed primarily of working age adults and families with children. An area with a high percentage of retirees, for instance, will earn income primarily from investments and transfer payments. This prediction is borne out in the non-labor income data in Table 9. In both Arizona and the US, non-labor income accounts for approximately one-third of total personal income. In contrast, non-labor income accounts for more than half of total personal income in Yavapai County. This finding will be discussed in more detail in the Non-Labor Income section.

Table 3. Median Age.

	<i>Median Age</i>
<i>Yavapai County</i>	44.5
<i>Arizona</i>	35.0
<i>United States</i>	36.7

Source: U.S. Census Bureau, American Community Survey, 2008

Age data may be relevant for Forest management decisions. A population's age may affect community values and uses associated with Forest lands. For example, older populations are more likely to desire easily accessible recreation opportunities.

Gender disparities in counties (i.e., deviations from a 50/50 split) may have numerous explanations, including: (1) the significant presence of an industry that is often dominated by one gender – e.g., forestry or mining; (2) a large number of single-parent households; (3) a large retiree population, which due to differences in life expectancy, often leads to a higher concentration of women; and (4) a combination of the above and other unnamed factors.

Table 4 displays the gender breakdown for Yavapai County, Arizona, and the US. Yavapai County has a high percentage of female residents relative to the state and the nation, possibly reflecting the substantial retiree population in the county. However, the county's gender distribution does not markedly deviate from the national distribution.

Table 4. Gender Distribution.

	<i>Females (% Total Population)</i>	<i>Males (% Total Population)</i>
<i>Yavapai County</i>	51.1	48.9
<i>Arizona</i>	49.9	50.1
<i>United States</i>	50.7	49.3

Source: U.S. Census Bureau, American Community Survey, 2008

Educational Attainment

Educational attainment, the measure of people with at least a high school diploma or bachelor's degree, is an important indicator of an area's social and economic opportunities and its ability to adapt to change. Table 5 lists the percentage of the adult population with at least a high school diploma and a bachelor's degree.

Table 5. Educational Attainment, Percent of Persons Age 25+, 2006-2008 Estimate.

	<i>High School Graduate</i>	<i>Bachelor's Degree or Higher</i>
<i>Yavapai County</i>	87.5%	23.0%
<i>Arizona</i>	81.0%	23.5%
<i>United States</i>	80.4%	24.4%

Source: U.S. Census Bureau, American Community Survey, 2008

The vast majority of adult residents of Yavapai County are high school graduates. The county has a higher percentage of high school graduates than either the state or nation. The difference in educational attainment nearly disappears when higher education (B.A. or advanced degree) is measured. The county, state, and nation all have similar percentages of residents with a bachelor's degree or higher. This finding suggests that the planning area is relatively well-educated. Opportunities likely exist for working-age adults with high levels of education. The presence of highly educated adults may be self-reinforcing: a highly educated population is a signal that an area provides economic and cultural opportunities, which attracts additional college educated adults to the area. This process leads to further economic development and job creation. In contrast, areas with low levels of educational attainment have lower levels of human capital, which reduces an area's ability to capitalize on economic change (Florida, 2002).

There are four institutions of higher education in Yavapai County: Embry-Riddle Aeronautical University, Northern Arizona University-Yavapai, Prescott College, and Yavapai College. All four are located in the city of Prescott (Arizona Department of Commerce, 2008). Post-secondary institutions improve a county's

ability to retain and attract young residents. In areas without higher educational opportunities, young people who wish to continue their education migrate out of the area – a process known as the “brain drain.”

Forest Visitors

Table 6 reports Forest activity participation. Viewing natural features, viewing wildlife, hiking/walking, and relaxing are activities in which more than half of Forest visitors engage. Hiking/walking is the most common main activity (i.e., the primary purpose of the Forest visit), followed by viewing natural features, driving for pleasure, and relaxing.

Table 6. Forest Activity Participation.

Activity	% Participation	% Main Activity
Viewing Natural Features	80.6	14.0
Viewing Wildlife	70.2	1.0
Hiking/Walking	68.3	44.4
Relaxing	55.6	7.2
Driving for Pleasure	24.4	8.0
Developed Camping	12.8	5.3
Picnicking	8.9	1.7
Fishing	7.8	4.8
Nature Study	6.4	0.8
Nature Center Activities	5.4	0.0
Visiting Historic Sites	4.6	0.5
Bicycling	4.3	3.5
Gathering Forest Products	3.1	0.4
Some Other Activity	3.1	2.7
Motorized Trail Activity	2.9	0.8
OHV Use	2.8	0.4
Non-motorized Water	2.3	1.8
Horseback Riding	2.0	2.1
Other Non-motorized	1.0	0.2
Primitive Camping	0.9	0.1
Hunting	0.5	0.4
Resort Use	0.5	0.0
No Activity Reported	0.3	0.3
Downhill Skiing	0.2	0.2
Backpacking	0.2	0.0
Other Motorized Activity	0.1	0.0
Motorized Water Activities	0.1	0.0
Snowmobiling	0.0	0.0
Cross-country Skiing	0.0	0.0

Source: USDA Forest Service, NVUM, 2011

Employment and Income

The previous section assessed demographic trends in the planning area relative to the state and national averages. This section will focus on economic conditions and trends in the planning area. This discussion provides additional information on the social and economic environment in the planning area. The baseline analysis is the foundation of subsequent impact analyses.

Per Capita Income

Per capita income is a key indicator of the economic well-being of a county. High per capita income may signal greater job opportunities, highly skilled residents, greater economic resiliency, and well-developed infrastructure. Table 7 provides data on per capita income in 2008 for the county, state, and nation. Per capita income in Yavapai County is slightly below Arizona's per capita income and several thousand dollars below per capita income in the US. However, per capita income data are incomplete without a discussion of cost of living. The topic will be addressed further in the Housing section of this report.

Table 7. Per Capita Income, 2008 USD.

	<i>Per Capita Income</i>
<i>Yavapai County</i>	\$24,880
<i>Arizona</i>	\$25,639
<i>United States</i>	\$27,466

Source: U.S. Census Bureau, American Community Survey, 2008

Earnings per Job

Per capita income offers an incomplete picture of the economic health of an area. Table 8 presents data on earnings per job. Whereas per capita income considers all sources of income (including wage and salary payments, transfer payments, investment earnings, dividends, and rents), earnings per job considers only wage and salary earnings. However, in Yavapai County, little difference exists between per capita income and earnings per job. As with per capita income, earnings per job in Yavapai County are below the state and national medians.

Table 8. Median Earnings Per Job, 2008 USD.

	<i>Earnings per Job</i>
<i>Yavapai County</i>	\$24,125
<i>Arizona</i>	\$29,206
<i>United States</i>	\$29,530

Source: U.S. Census Bureau, American Community Survey, 2008

Non-Labor Income

Non-labor income accounts for a higher percentage of total personal income in Yavapai County than it does in either the state or the nation. Table 9 displays the role of labor and non-labor income in total personal income for 1970 and 2006. The role of non-labor income has increased across all considered geographies since 1970.

Table 9. Contribution of Labor and Non-Labor Income to Total Personal Income, 1970 and 2006.

	<i>1970</i>		<i>2006</i>	
	<i>Labor %</i>	<i>Non-Labor %</i>	<i>Labor %</i>	<i>Non-Labor %</i>

<i>Yavapai County</i>	58%	42%	49%	51%
<i>Arizona</i>	74%	26%	68%	32%
<i>United States</i>	77%	23%	68%	32%

Source: Headwaters Economics, 2009

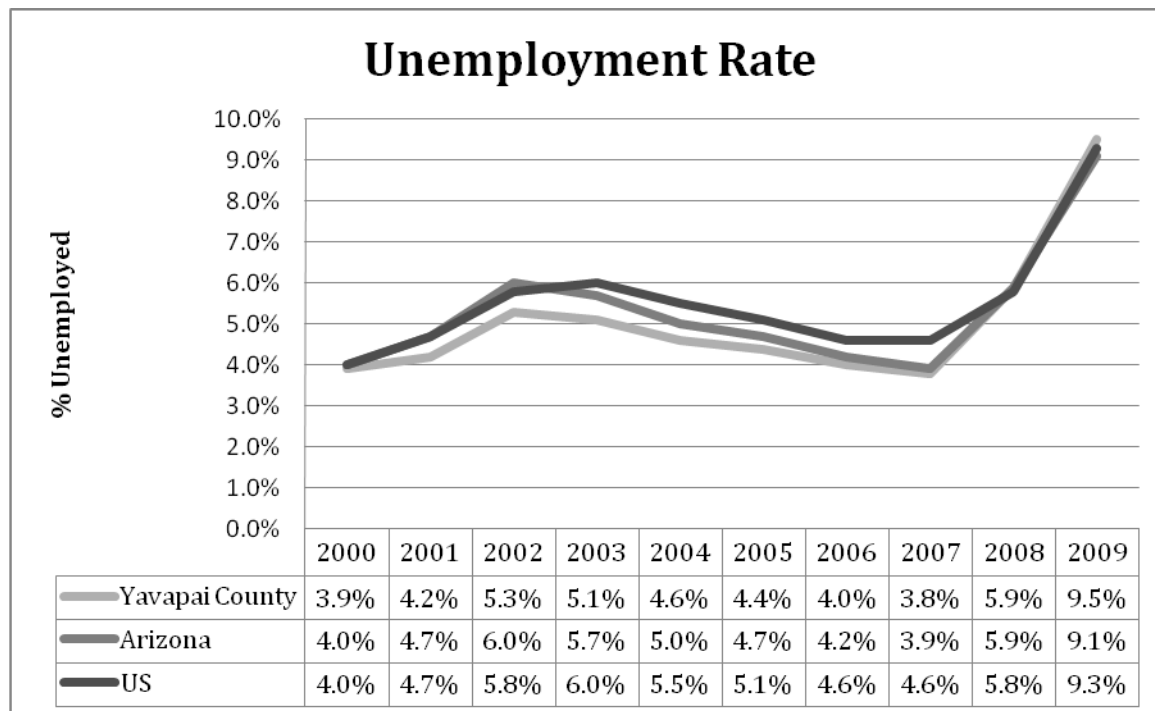
Non-labor income is not directly tied to employment; therefore, it can be more resistant to economic downturns. However, as the most recent recession demonstrated, asset markets can be quite volatile, and non-labor income that depends on investment returns may be unstable.

The increase in non-labor income reflects the changing demographic profile of the planning area. Older populations rely largely on non-labor income, including rents, dividend, and transfer (e.g., Social Security) payments. High percentages of non-labor income likely indicate higher concentrations of retirees. If the influx of retirees into the planning area continues, the growing role of non-labor income in the economy can also be expected to continue.

Unemployment

The unemployment rate provides insight into the correspondence between residents' skills and employment opportunities. The "natural" rate of unemployment has been posited to be around 5%. This is the so-called "natural" rate because this is a level that allows for movement between jobs and industries, but does not signal broad economic distress. Recently, the national unemployment rate has hovered near 9%. Figure 1 shows the unemployment trends for the US, Arizona, and Yavapai County.

Figure 1. Unemployment Rate, 2000-2009.



Source: U.S. Bureau of Labor Statistics, 2010

During much of the decade, Yavapai County had an employment rate below the national rate. However, since 2008 the unemployment rate in the county has converged with both the state and national

unemployment rates. This suggests that employment conditions in the county are similar to broader state and national trends.

Commuting

Commuting data provides evidence of the skill-match between area residents and available jobs. An area with high rates of out-commuting (i.e., residents leave the county for employment) likely offers limited job opportunities that match the skills and education of its residents. In contrast, areas with substantial in-commuting (i.e., non-residents come to the county for employment) likely have more available jobs than can be filled by qualified county residents.

Table 10 analyzes commuting patterns in Yavapai County. Most residents of Yavapai County also work in the county (88.1 percent), and 96.2 percent of jobs in Yavapai County are filled by residents of the county. Approximately 10 percent of employed county residents work outside the county, about evenly split between Maricopa and Coconino Counties. While six percent of jobs in Coconino County are filled by Yavapai County residents, only about one-third of one percent of jobs in Maricopa County are occupied by Yavapai County residents. This difference arises from size of the labor force in Maricopa County – the Phoenix metropolitan area attracts many workers from both Maricopa and the surrounding counties.

Table 10. Counts of Workers Commuting from Yavapai County.

County of Residence (CountyR)	Total Trips Originating in County	County of Work (CountyW)	Number of Trips	% of all trips originating in CountyR ending in CountyW	% of all trips ending in CountyW originating in CountyR
Yavapai County	67,109	Yavapai County	59,124	88.1	96.2
		Maricopa County	3,615	5.4	0.3
		Coconino County	3,333	5.0	6.0

Source: Missouri State Census Data Center, 2000

Housing

The above comparisons of per capita income and earnings per job between the planning area, state, and the nation are incomplete. Data on local cost of living offer additional context. Of the contributions to cost of living, housing costs are among the most expensive. Table 11 presents the median home value in Yavapai County, Arizona, and the US in 2008. Although Yavapai County has relatively low per capita income and earnings per job relative to the state and the nation, home values in the county exceed both the state and national medians. This finding suggests that Yavapai County residents spend a relatively high percentage of their income on housing.

Table 11. Median Value of Owner-Occupied Homes.

	<i>Median Home Value</i>
<i>Yavapai County</i>	\$247,200
<i>Arizona</i>	\$234,600
<i>United States</i>	\$192,400

Source: U.S. Census Bureau, American Community Survey, 2008

A key driver of housing cost is the vacancy rate. A high vacancy rate indicates that there are more homes available than renters/buyers desire, which will cause home prices to decrease. A high vacancy rate is more likely in communities with low population growth rates. A low vacancy rate indicates that housing may be difficult to find and competition for housing between renters/buyers may exist, which will cause home prices to increase. A low vacancy rate is more likely in communities with high population growth rates.

Table 12 provides the housing vacancy rates. In the statistics, seasonal homes are considered vacant. In areas with high percentages of part-year residents (such as Arizona), seasonal use can substantially skew the vacancy rate. In both Yavapai County and Arizona, seasonal use accounts for approximately half of total vacancies. In contrast, seasonal use accounts for closer to one-third of total vacancies in the United States. Therefore, seasonal use has been excluded from calculation of the vacancy rate.

Table 12. Total Housing Units and Vacancy Rates.

Location	Total	Occupied	Vacant	Seasonal Use	Vacant (Seasonal Excluded)	Vacancy Rate (Seasonal Excluded)
Yavapai County	81,730	70,171	11,559	6,048	5,511	6.7%
Arizona	2,189,189	1,901,327	287,862	141,965	145,897	6.7%
United States	115,904,641	105,480,101	10,424,540	3,578,718	6,845,822	5.9%

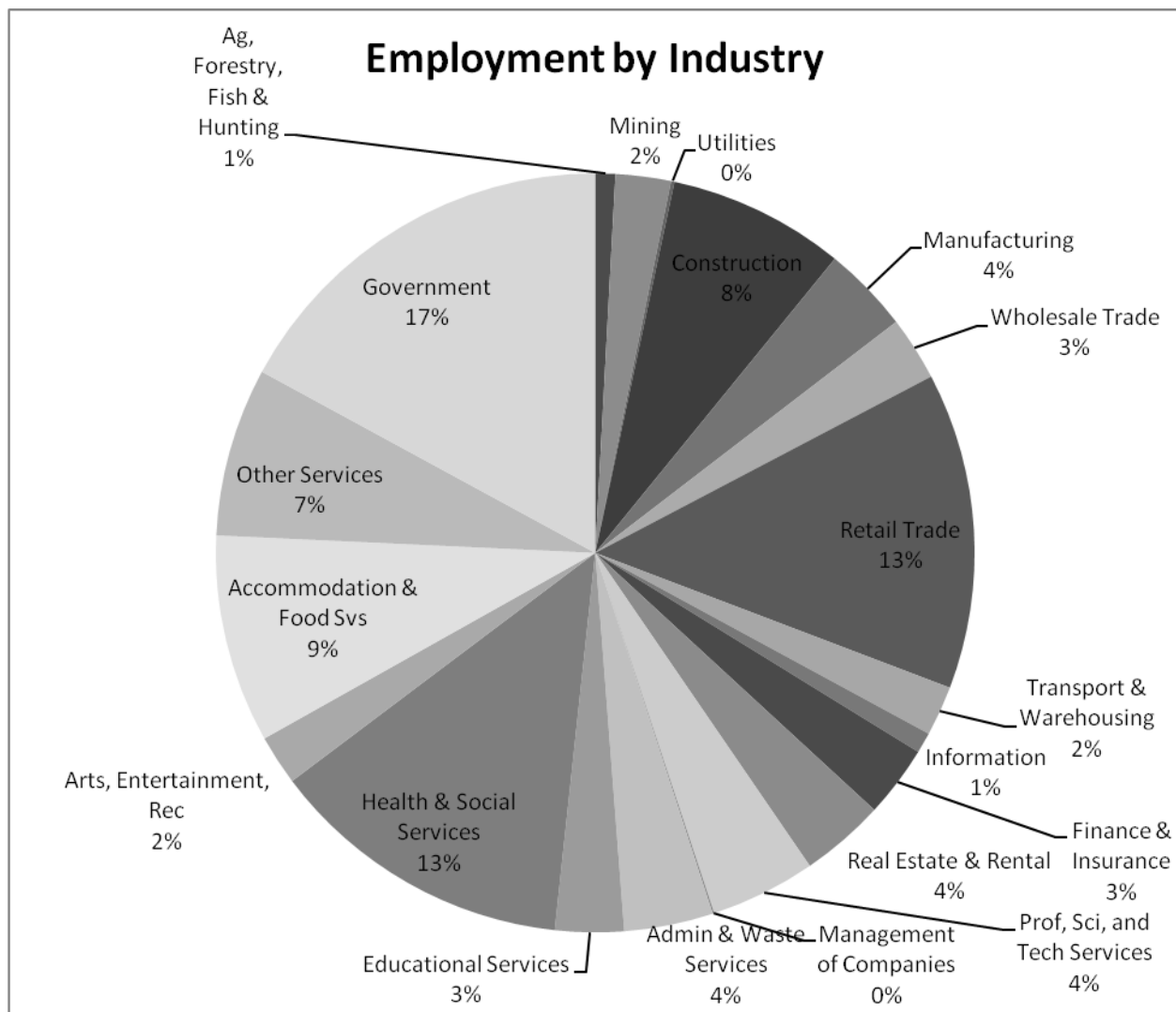
Source: U.S. Census Bureau 2000

Yavapai County and Arizona have identical vacancy rates. The rate in the county and state are slightly above the national vacancy rate.

Economic Diversity

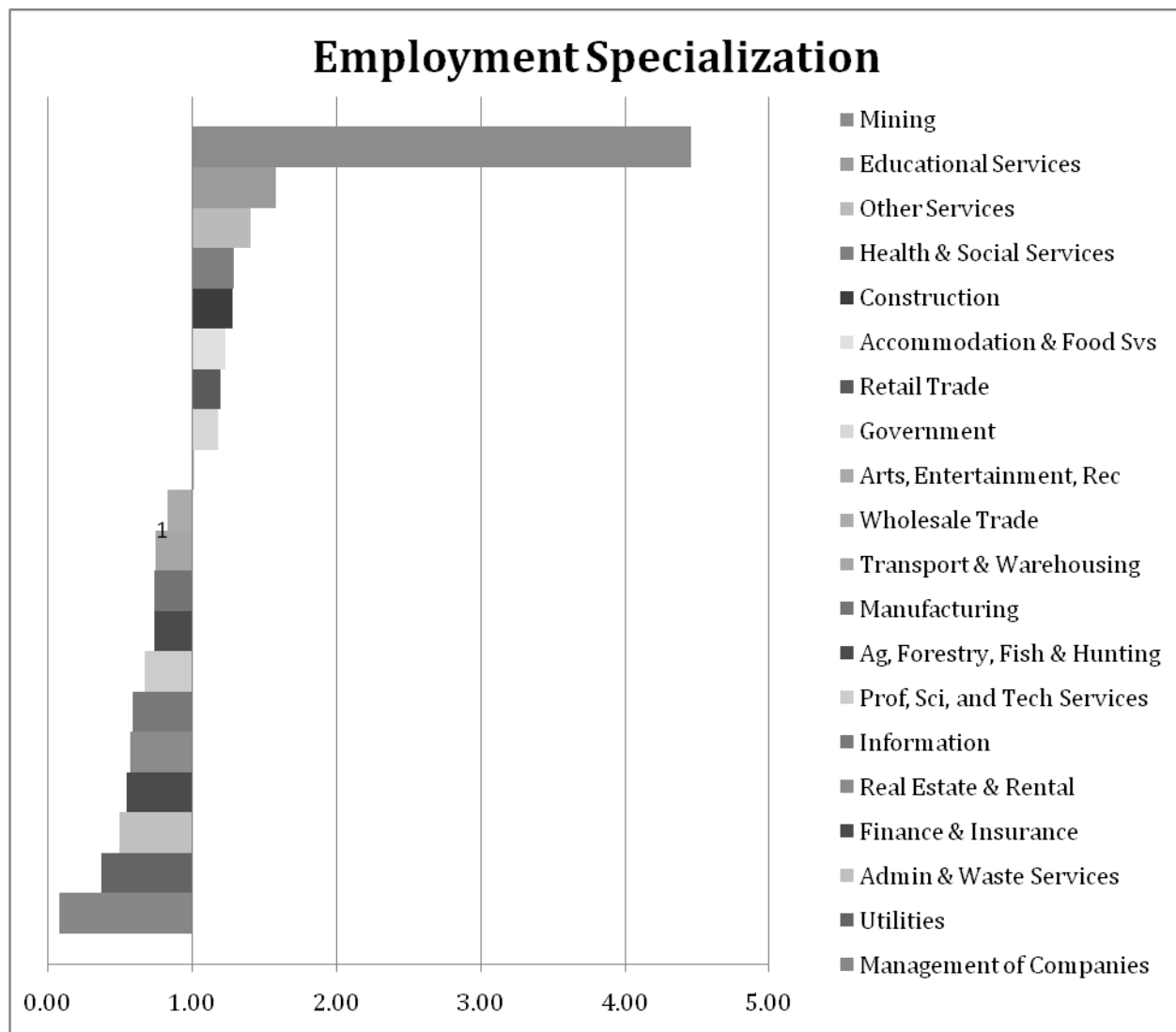
Economic diversity generally promotes stability and offers greater employment opportunities. Highly specialized economies (i.e., those that depend on very few industries for the bulk of employment and income) are prone to cyclical fluctuations and offer more limited job opportunities. Determining the degree of specialization in an economy is important for decision-makers, particularly when the dominant industry can be affected by changes in policy. For Forest Service decision-makers, this is likely to be the case where the forest products industry or the tourism and recreation industries, for instance, are reliant on the local National Forest.

Figure 2 provides a breakdown of employment by industry in Yavapai County. Government is the dominant sector – approximately one-sixth of the jobs in the county are in government. Retail trade and health and social services each account for more than 10% of local employment. These industries are consistent with findings discussed in the demographic section – namely a substantial government presence due to public land management, a large retiree population that consumes health and social services, and amenities that attract tourists who support the retail trade sector.

Figure 2. Employment by Industry, Yavapai County.

Source: MIG 2009

The Interior Columbia Basin Ecosystem Management Project identified communities that were specialized with respect to employment. This method is applied here using the ratio of the percent employment in each industry in the region of interest (Yavapai County) to an average percent of employment in that industry for a larger reference area (the state of Arizona). For a given industry, when the percent employment in the analysis region is greater than in the reference area, local employment specialization exists in that industry (USFS, 1998). Using this criterion applied with 2009 data, Yavapai County can be characterized as specialized with respect to several industries, particularly mining and educational services (MIG 2009). Figure 3 provides the employment specialization index for all industries in Yavapai County.

Figure 3. Employment Specialization, Yavapai County.

Source: MIG 2009

Whereas Figure 2 considers Yavapai County in isolation, Figure 3 compares industry concentration in Yavapai County to the state as a whole. As the figures demonstrate, these two methods of data analysis suggest quite different results. Mining accounts for only two percent of employment in the county – a seemingly insignificant figure until it is put in the context of the state. A resident of Yavapai County is approximately 4.5 times more likely to be employed in the mining industry compared to residents of Arizona as a whole. Similarly, although government employment dominates Figure 2, Yavapai County is only slightly specialized in government employment compared to the state. Across Arizona, government employment provides a substantial percentage of total employment. Public lands (National Forests, National Parks, BLM-managed public lands, and state-owned lands), military installations, and tribal lands are common across the state. All of these features contribute to a relatively large government presence in Arizona.

Payments to States and Counties

As mentioned previously, approximately 75 percent of the land in Yavapai County is public. The Forest Service owns 38 percent of the land in the county (including the Prescott, Coconino, and Tonto National Forests) (Arizona Department of Commerce, 2008). The Forest Service makes payments to states and counties that contain National Forest System lands. These payments fall into two categories: Payments in Lieu of Taxes (PILT) and Secure Rural Schools and Community Self-Determination Act payments (SRSCS). Table 13 displays the payments to counties from the Prescott National Forest. Although the Forest's payments to Coconino County are listed here, they will not be considered in the economic impact analysis.

Federal agencies do not pay property taxes; therefore, PILT is distributed to counties to compensate for the local services that support activities on federal lands. These services include law enforcement, road maintenance, and fire departments.

SRSCS payments are intended to improve public schools, maintain infrastructure, improve the health of watersheds and ecosystems, protect communities, and strengthen local economies.

Table 13. Payments to states and counties from the Prescott National Forest.

	SRSCS (FY09)	PILT (FY10)	Total FS
Yavapai County	\$1,771,716.45	\$394,327.38	\$2,166,043.83
Coconino County	\$59,972.21	\$14,439.17	\$74,411.38
Prescott NF	\$1,831,688.66	\$408,766.55	\$2,240,455.21

Source: USDA Forest Service 2010 and DOI PILT 2010.

Environmental Justice

In 1994, President Clinton issued Executive Order 12898. This order directs federal agencies to focus attention on the human health and environmental conditions in minority and low-income communities. The purpose of EO 12898 is to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations.

Environmental justice (EJ) is the fair treatment and meaningful involvement of people of all races, cultures, and incomes, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The goal of environmental justice is for Federal agency decision-makers to identify impacts that are disproportionately high and adverse with respect to minority and low-income populations and identify alternatives that will avoid or mitigate those impacts. According to USDA DR5600-002 (USDA 1997), EJ, minority, minority population, low-income, and human health and environmental effects, are defined as follows:

Environmental Justice means that, to the greatest extent practicable and permitted by law, all populations are provided the opportunity to comment before decisions are rendered on, are allowed to share in the benefits of, are not excluded from, and are not affected in a disproportionately high and adverse manner by, government programs and activities affecting human health or the environment.

Minority means a person who is a member of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic.

Minority Population means any readily identifiable group of minority persons who live in geographic proximity to, and, if circumstances warrant, migrant farm workers and other geographically

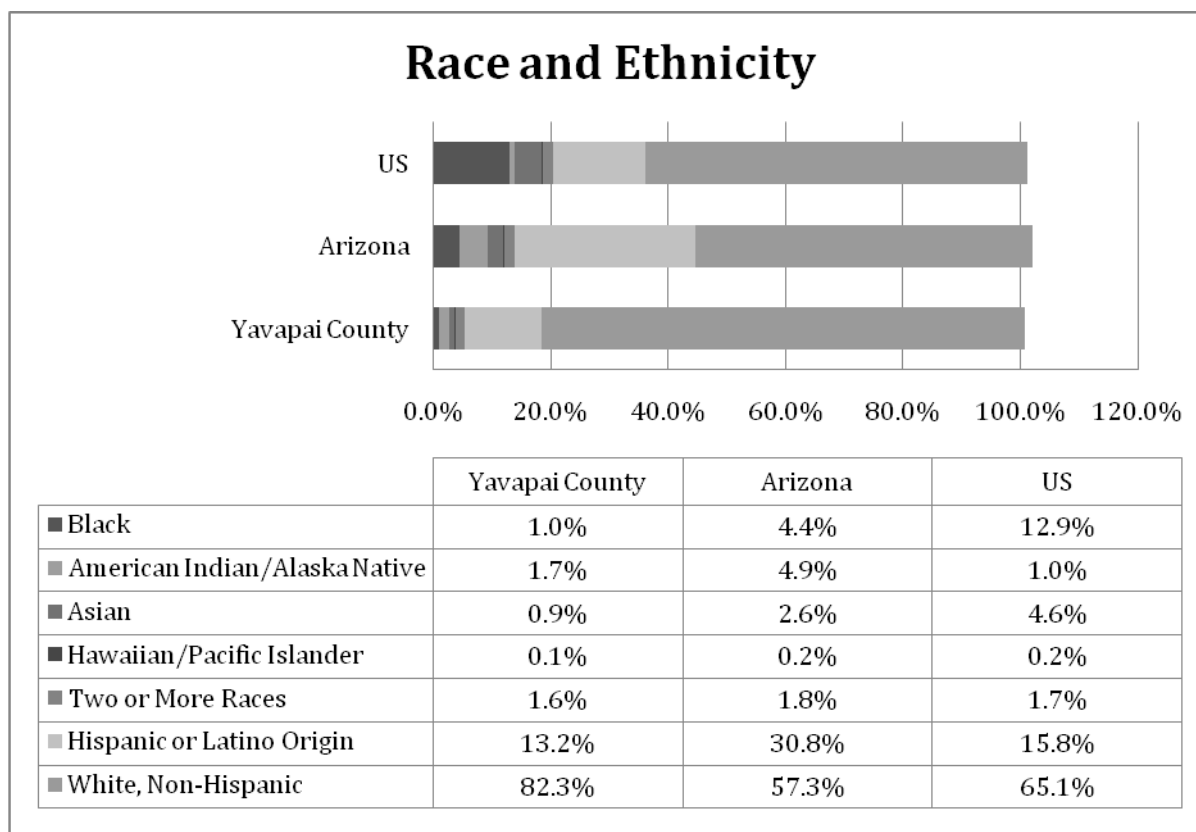
dispersed/transient persons who will be similarly affected by USDA programs or activities.

Low-Income Population means any readily identifiable group of low-income persons who live in geographic proximity to, and, if circumstances warrant, migrant farm workers and other geographically dispersed/transient persons who will be similarly affected by USDA programs or activities. Low-income populations may be identified using data collected, maintained and analyzed by an agency or from analytical tools such as the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty.

Human Health and/or Environmental Effects as used in this Departmental Regulation includes interrelated social and economic effects.

The emphasis of environmental justice is on health effects and/or the benefits of a healthy environment. The CEQ has interpreted health effects with a broad definition: "Such effects may include ecological, cultural, human health, economic or social impacts on minority communities, low-income communities or Indian Tribes ...when those impacts are interrelated to impacts on the natural or physical environment" (CEQ, 1997).

According to US Census data reported in Figure 4, Yavapai County is less racially and ethnically diverse than the state and nation. However, this finding does not eliminate the need to consider potential disproportionate impacts of Forest Service management actions. A county may have a low overall concentration of minority residents, but still have areas with a high concentration of minority residents who could be adversely affected by management actions. The impact analysis will consider the potential for management actions to disproportionately negatively affect an environmental justice population. At this point, however, environmental justice issues related to minority racial and ethnic populations appear unlikely.

Figure 4. Race and Ethnicity, County, State, and Nation.

Source: U.S. Census Bureau, 2009

Table 14 reports the percentage of residents living in poverty. Yavapai County has a lower poverty rate than both Arizona and the US. This finding suggests that environmental justice issues related to low income populations are unlikely to arise. However, as with the racial and ethnic data presented above, the low total percentage of residents with potential environmental justice concerns does not negate the need to consider any disproportionate impacts to vulnerable groups. The impact analysis will consider the potential for Forest Service management actions to adversely affect all area residents, with a particular attention to any potential disproportionate impacts on minority and/or low-income residents.

Table 14. Percent of Persons Living in Poverty.

	<i>Poverty Rate (Percent)</i>
<i>Yavapai County</i>	12.8
<i>Arizona</i>	14.3
<i>United States</i>	13.2

Source: U.S. Census Bureau, American Community Survey, 2006-2008

Environmental Consequences

The previous sections assessed past and current social and economic conditions. The following section will consider the potential consequences of alternative management scenarios on the social and economic environment. Section 219.12(h) of the 1982 rule directs the planning team to “evaluate the significant physical, biological, economic, and social effects of each management alternative that is considered in detail. The evaluation shall include a comparative analysis of the aggregate effects of the management alternatives

and shall compare present net value, social and economic impacts, outputs of goods and services, and overall protection and enhancement of environmental resources.” This section will partially fulfill the evaluation requirements. The Data Sources section below describes the analysis procedures employed in this document.

Methodology and Assumptions

Data Sources

Economic impacts were modeled using IMPLAN Professional Version 3.0 and the Forest Economic Analysis Spreadsheet Tool (FEAST), with 2009 data. Data on use levels under each alternative were collected from the Forest’s resource specialists. In most instances, the precise change is unknown. Therefore, the changes are based on the professional expertise of the Forest’s resource specialists (1982 rule, 219.12(g)).

Financial efficiency analysis was conducted with QuickSilver Version 6. Data on program revenues and program expenditures were provided by the Prescott National Forest budget staff and resource specialists (1982 rule, 219.12(e)).

Social impacts use the baseline social conditions presented in the affected environment section and visitor profiles from the FY2009 NVUM results for the Forest to discern the primary values that the Forest provides to area residents and visitors. Social effects are based on the interaction of the identified values with estimated changes to resource availability and uses.

Assumptions

1. Information on the timing of costs and benefits was not available for the economic efficiency analysis. Furthermore, the analysis does not provide a full accounting of all costs and benefits. The only benefits considered are program revenues (i.e., Forest receipts). The only costs considered are direct Forest expenditures. Therefore, the following estimates of net present value are of limited to the available data, which was sufficient to conduct a thorough economic efficiency analysis.
2. The economic impact of grazing was estimated using authorized levels. However, actual use is permitted annually based on various factors, such as current forage conditions. Therefore, the estimated economic impact of grazing is likely to overstate the jobs and income provided.
3. Changes in use levels were estimated using professional judgment. However, actual changes in use are difficult to predict and frequently depend on factors outside the control of the Forest Service.
4. Some of the value of Forest management is not captured in market transactions. Non-market goods and services, such as clean air and scenic vistas, have economic values. However, the monetary value of such goods and services is generally unknown. As a result, it is difficult to analyze potential tradeoffs between market and non-market values. In general, management actions that promote Forest health will increase non-market values. For the purpose of this analysis, recommended wilderness areas will be used as a proxy for non-market values. Loomis and Richardson identify eight economic values associated with US wilderness, including: recreation benefits, community benefits, passive use values, scientific values, biodiversity values, off-site benefits (e.g., increased property values adjacent to wilderness), ecosystem services, and educational values (2001).
5. The framework for the social analysis employs generalities. Area residents and Forest visitors have diverse preferences and values that may not be fully captured in the description of social consequences. Nevertheless, the general categories are useful for assessing social impacts based on particular Forest-related interests.

Summary of Effects

Economic Impact Analysis

Economic impact analysis estimates the employment and labor income consequences of Forest management actions. Table 15 provides employment estimates, by alternative. Table 16 provides labor income estimates, by alternative. These tables will be referenced in the alternative-specific descriptions of economic impacts.

Table 15. Employment by Program Area, by Alternative.

	Number of Jobs Contributed				
	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Recreation	283	291	291	290	287
Grazing	42	42	42	42	42
Minerals	9	9	9	9	9
Timber	0	0	0	0	0
Payments to States and Counties	41	41	41	41	41
FS	281	281	281	281	281
TOTAL	656	664	664	663	660

Source: IMPLAN 2009

Table 16. Labor Income by Program Area, by Alternative.

	Labor Income Contributed				
	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Recreation	\$8,461,000	\$8,727,000	\$8,727,000	\$8,695,000	\$8,580,000
Grazing	\$446,000	\$446,000	\$446,000	\$446,000	\$446,000
Minerals	\$406,000	\$406,000	\$406,000	\$406,000	\$406,000
Timber	\$0	\$0	\$0	\$0	\$0
Payments to States and Counties	\$1,728,000	\$1,728,000	\$1,728,000	\$1,728,000	\$1,728,000
FS	\$12,575,000	\$12,575,000	\$12,575,000	\$12,575,000	\$12,575,000
TOTAL	\$23,616,000	\$23,882,000	\$23,882,000	\$23,850,000	\$23,735,000

Source: IMPLAN 2009

Financial Efficiency Analysis

Financial efficiency analysis compares Forest expenditures and revenues throughout the life of a Forest plan. The figures presented here are based on a 15-year period. Table 17 presents Forest expenditures, by program area. These figures are based on average expenditures over the past three fiscal years (FY08-FY10). Estimated changes in expenditures between alternatives are based on the professional judgment of Forest staff.

Table 17. Prescott NF Program Expenditures, by Alternative.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
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Range	\$501,056	\$501,056	\$501,056	\$501,056	\$501,056
Recreation	\$1,483,067	\$1,631,374	\$1,557,220	\$1,631,374	\$1,631,374
Minerals	\$250,349	\$250,349	\$250,349	\$250,349	\$250,349
Timber	\$447,006	\$447,006	\$447,006	\$447,006	\$447,006
Special Uses	\$434,520	\$434,520	\$434,520	\$434,520	\$434,520

Source: Prescott NF Budget Staff

Table 18 shows Forest revenues, by program area. Where available, these figures are based on average revenues over the past three fiscal years (FY08-FY10). When three years of data were unavailable, the most recent year has been used. Estimated changes in revenues between alternatives are based on the professional judgment of Forest staff.

Table 18. Prescott NF Program Revenue, by Alternative.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Range	\$141,158	\$141,158	\$141,158	\$141,158	\$141,158
Recreation	\$482,851	\$516,071	\$507,235	\$521,576	\$507,235
Minerals	\$225,351	\$225,351	\$225,351	\$225,351	\$225,351
Timber	\$93,854	\$93,854	\$93,854	\$93,854	\$93,854
Special Uses	\$255,850	\$255,850	\$255,850	\$255,850	\$255,850

Source: Prescott NF Budget Staff

Table 19 presents present net value (PNV) by program area and alternative. PNV is the difference between program revenues (benefits) and program expenditures (costs) over a 15-year period, using a 4% discount rate.

Table 19. Present Net Value (PNV) by Alternative and Program Area.

	Alternative A	Alternative B	Alternative C	Alternative D	Alternative E
Range	\$ (4,361,383)	\$ (4,361,383)	\$ (4,361,383)	\$ (4,361,383)	\$ (4,361,383)
Recreation	\$ (12,121,005)	\$ (13,515,673)	\$ (12,724,125)	\$ (13,448,962)	\$ (13,622,752)
Minerals	\$ (302,935)	\$ (302,935)	\$ (302,935)	\$ (302,935)	\$ (302,935)
Timber	\$ (4,279,632)	\$ (4,279,632)	\$ (4,279,632)	\$ (4,279,632)	\$ (4,279,632)
Special Uses	\$ (2,165,192)	\$ (2,165,192)	\$ (2,165,192)	\$ (2,165,192)	\$ (2,165,192)
Total PNV	\$ (23,230,148)	\$ (24,624,817)	\$ (23,833,268)	\$ (24,558,106)	\$ (24,731,896)

Source: QuickSilver6, 2011

Social Consequences

Changes to resource availability and uses can affect the quality of life of area residents and Forest visitors. For the most part, anticipated resource availability is consistent across alternatives. As Table 15 and Table 16 show, grazing, mineral removal, timber and forest product collection, and payments to local governments remain the same under all alternatives. Those who primarily value these Forest uses and activities are unlikely to have their quality of life affected by decisions made in the Forest plan. Recreation and recommended wilderness areas are the main sources of potential social and economic consequences between alternatives.

As the Population and Demographics section explains, Yavapai County has a relatively small, albeit rapidly growing, population that is concentrated in several cities, with Prescott at the core. The rest of the county

has a low population density, which suggests that many residents experience social and economic isolation. The median age of Yavapai County residents is nearly a decade higher than Arizona as a whole, which indicates a substantial retiree population. The combination of an older population (who have more discretionary time) and a high degree of public land ownership (75% of lands in Yavapai County are public) suggests that Forest recreation is an important contributor to local quality of life. All action alternatives (B, C, D, and E) are expected to increase Forest recreation opportunities. Therefore, these alternatives are likely to improve quality of life, compared to current management, for Forest users who value recreation.

Of the approximately 1.2 million annual Forest visits, 40,000 are estimated to be visits to designated wilderness areas (USDA Forest Service, NVUM, 2011). This translates into about 3.5% of total Forest visits. Although wilderness visits account for a relatively small percentage of total visits, wilderness visitors are likely to spend more time on the Forest than the average visitor (USDA Forest Service, NVUM, 2011). In addition, wilderness areas provide opportunities for solitude and wildlife-watching that may be difficult in more heavily used areas of the Forest. In addition to providing unique recreation opportunities, wilderness areas can promote forest health and ecosystem services. Individuals who value resource protection above resource use are likely to derive benefit from the recommendation of additional wilderness areas, regardless of intention to recreate in the wilderness. Alternatives B, D, and E recommend the designation of additional wilderness acres. These alternatives are expected to appeal to people and groups who seek additional wilderness recreation opportunities and/or the protection of Forest resources. Alternatives A and C maintain current levels of wilderness, and therefore would not affect social well-being related to wilderness values.

Effects Common to All Alternatives

Direct and Indirect Effects

Grazing: Under all alternatives, cattle grazing on the Forest would contribute approximately 42 jobs and \$446,000 in labor income to Yavapai County, annually. These figures assume that HMs are fully utilized. Based on current use levels, approximately 26 jobs and \$270,000 in labor income are supported by grazing on the Forest.

The benefit to permittees of public forage, below the market price, is approximately \$800,000. The average private land grazing fee per AUM in Arizona is \$9, compared to the \$1.35 public land grazing fee (USDA NASS, 2011). If Prescott NF grazing permittees had to replace their public land forage with private land forage, the annual cost of cattle grazing would be \$941,058 (104,562 AUMs at \$9 per AUM). With FS forage, permittees pay \$141,158.70 (104,562 AUMs at \$1.35 per AUM). Therefore, the economic benefit to cattle ranchers is not fully captured in the employment and labor income figures presented above. However, the surplus to the ranchers can also be seen as a cost to providers of private forage.

Timber: Although timber and other forest products are collected from the Forest, Yavapai County does not have a commercial logging industry. The commercial forestry activities that occur on the Forest originate in Maricopa and other counties. Therefore, under all alternatives, the timber and forestry program are estimated to contribute neither jobs nor labor income to the Yavapai County economy.

Minerals: The extraction of minerals from the Forest would support approximately 9 jobs and \$406,000 in labor income in Yavapai County, annually. Mineral activity is not expected to change based on actions taken under any of the alternatives.

Payments to States and Counties: Under all alternatives, payments to states and counties, in the form of PILT and SRSCS, would support approximately 41 jobs and \$1.72 million in labor income in Yavapai County, annually.

Alternative A: No Action

Alternative A would continue Forest management according to the 1987 Forest Plan.

Direct and Indirect Effects

Recreation: Approximately 1.2 million people visit the Prescott NF annually (FS NVUM, 2011). Table 20 displays the distribution of these 1.2 million visitors. Forest visitors spend money in the local economy, which supports employment and income in Yavapai County. Recreation on the Forest supports approximately 283 jobs and \$8.46 million dollars in labor income in Yavapai County, annually.

Table 20. Distribution of Prescott NF Visits by Market Segment, Current Conditions.

Market Segment	Number of Visits	Percent of NF Visits
Non-local day	71,241	6%
Non-local overnight on NF	118,736	10%
Non-local overnight off NF	47,494	4%
Local day	724,287	61%
Local overnight on NF	47,494	4%
Local overnight off NF	0	0%
Non-primary visits	178,103	15%

Source: USDA Forest Service, NVUM, 2011

Continuation of current management under alternative A will not affect visit frequency or composition. However, recreation participation on the Forest may change as a result of population and demographic changes, or changes in tastes and preferences related to recreation. This is true under all alternatives. Such changes are uncertain and are not analyzed here.

Non-Market Values: Currently, 104,483 acres of the Forest are designated as wilderness. Alternative A does not recommend any additional acres of wilderness. Based on the non-market values assumption listed above, alternative A is expected to maintain current levels of non-market values.

Financial Efficiency: As shown in Table 19, the present net value of alternative A is \$(23,230,148). This is the highest PNV of the alternatives.

Alternative B

Direct and Indirect Effects

Recreation: Table 21 shows the predicted changes to Forest visits as a result of the implementation of alternative B. Recreation visits to the Forest are expected to increase slightly with the implementation of alternative B, compared to alternative A.

Under alternative B, recreation on the Forest would support approximately 291 jobs and \$8.73 million dollars in labor income in Yavapai County, annually.

Table 21. Predicted Distribution of Prescott NF Visits by Market Segment, Alternative B.

Market Segment	Number of Visits	Percent of NF Visits
Non-local day	71,241	6%
Non-local overnight on NF	124,673	10%

Non-local overnight off NF	48,444	4%
Local day	796,716	63%
Local overnight on NF	49,869	4%
Local overnight off NF	0	0%
Non-primary visits	178,103	14%

Source: USDA Forest Service, NVUM, 2011; Prescott NF Recreation Staff, 2011

Note: Due to rounding, percent of visits may not sum to 100%

Recreation visits are expected to increase relative to alternative A due to improved trails and trailheads, enhanced fishing opportunities, and increased camping opportunities.

Non-Market Values: Currently, 104,483 acres of the Forest are designated as wilderness. Alternative B recommends 43,440 additional wilderness acres, comprising 8 areas. Based on the non-market values assumption listed above, alternative B is expected to offer higher levels of non-market values relative to alternative A.

Financial Efficiency: As shown in Table 19, the present net value of alternative B is \$(24,624,817). This is the second lowest PNV of the alternatives.

Alternative C

Direct and Indirect Effects

Recreation: Table 22 shows the predicated changes to Forest visits as a result of the implementation of alternative C. Recreation visits to the Forest are expected to increase slightly with the implementation of alternative C, compared to alternative A.

Under alternative C, recreation on the Forest would support approximately 291 jobs and \$8.73 million dollars in labor income in Yavapai County, annually.

Table 22. Predicted Distribution of Prescott NF Visits by Market Segment, Alternative C.

Market Segment	Number of Visits	Percent of NF Visits
Non-local day	71,241	6%
Non-local overnight on NF	124,673	10%
Non-local overnight off NF	48,444	4%
Local day	774,987	62%
Local overnight on NF	49,869	4%
Local overnight off NF	0	0%
Non-primary visits	178,103	14%

Source: USDA Forest Service, NVUM, 2011; Prescott NF Recreation Staff, 2011

Note: Due to rounding, percent of visits may not sum to 100%

Recreation management under alternative C would be similar to management under alternative B. Therefore, recreation visits are expected to increase the same amount under alternatives B and C.

Non-Market Values: Currently, 104,483 acres of the Forest are designated as wilderness. Alternative C does not recommend any additional acres of wilderness. Based on the non-market values assumption listed above, alternative C is expected to maintain current levels of non-market values.

Financial Efficiency: As shown in Table 19, the present net value of alternative C is \$(23,833,268). This is the second highest PNV of the alternatives.

Alternative D

Direct and Indirect Effects

Recreation: Table 23 shows the predicted changes to Forest visits as a result of the implementation of alternative D. Recreation visits to the Forest are expected to increase slightly with the implementation of alternative D, compared to alternative A.

Under alternative D, recreation on the Forest would support approximately 290 jobs and \$8.70 million dollars in labor income in Yavapai County, annually.

Table 23. Predicted Distribution of Prescott NF Visits by Market Segment, Alternative D.

Market Segment	Number of Visits	Percent of NF Visits
Non-local day	71,241	6%
Non-local overnight on NF	122,298	10%
Non-local overnight off NF	48,919	4%
Local day	811,201	63%
Local overnight on NF	50,819	4%
Local overnight off NF	0	0%
Non-primary visits	178,103	14%

Source: USDA Forest Service, NVUM, 2011; Prescott NF Recreation Staff, 2011

Note: Due to rounding, percent of visits may not sum to 100%

Recreation management under alternative D focuses on dispersed recreation opportunities. Fewer new developed camping opportunities would lead to smaller increases in use among non-local overnight visitors staying on the Forest. Therefore, the employment and income consequences under alternative D would be lower than under alternatives B and C, but higher than under alternative A.

Non-Market Values: Currently, 104,483 acres of the Forest are designated as wilderness. Alternative D recommends 116,262 additional wilderness acres, comprising 16 areas. Based on the non-market values assumption listed above, alternative D is expected to support the highest levels of non-market values of any of the alternatives.

However, several factors complicate the assessment of the economic consequences of wilderness designation. Namely: (1) Relative scarcity – a number of protected wilderness areas already exist in the Forest. The marginal value of each additional acre of wilderness is expected to decrease (as wilderness becomes more plentiful, the willingness to pay for additional wilderness decreases). The marginal values are unknown. (2) The self-limiting nature of parts of the Forest means that, in practice, many non-designated areas are already protected from motorized access. In these instances, the wilderness designation is unlikely to add value. (3) Potential unintended consequences of wilderness designation may counteract the economic benefits of wilderness designation. Potential consequences include: increased difficulty of trash pick-up, increased difficulty of ecosystem restoration treatments, and increased difficulty of fuels management.

Financial Efficiency: As shown in Table 19, the present net value of alternative D is \$(24,558,106). This is the third lowest PNV of the alternatives.

Alternative E

Direct and Indirect Effects

Recreation: Table 24 shows the predicted changes to Forest visits as a result of the implementation of alternative E. Recreation visits to the Forest are expected to increase slightly with the implementation of alternative E, compared to alternative A.

Under alternative E, recreation on the Forest would support approximately 287 jobs and \$8.58 million dollars in labor income in Yavapai County, annually.

Table 24. Predicted Distribution of Prescott NF Visits by Market Segment, Alternative E.

Market Segment	Number of Visits	Percent of NF Visits
Non-local day	71,241	6%
Non-local overnight on NF	119,923	10%
Non-local overnight off NF	48,444	4%
Local day	774,987	62%
Local overnight on NF	48,919	4%
Local overnight off NF	0	0%
Non-primary visits	178,103	14%

Source: USDA Forest Service, NVUM, 2011; Prescott NF Recreation Staff, 2013

Note: Due to rounding, percent of visits may not sum to 100%

Recreation management under alternative E would be similar to management under alternative B, but with less emphasis on developed recreation and a weaker commitment to deferred maintenance. As a result, visitation is expected to increase less under alternative E compared to alternatives B, C, and D. However, visitor use is expected to increase relative to alternative A.

Non-Market Values: Currently, 104,483 acres of the Forest are designated as wilderness. Alternative E recommends 23,137 additional wilderness acres, comprising 8 areas. Based on the non-market values assumption listed above, alternative E is expected to offer higher levels of non-market values relative to alternative A.

Financial Efficiency: As shown in Table 19, the present net value of alternative E is \$(24,731,896). This is the lowest PNV of the alternatives.

Cumulative Effects – All Alternatives

Under all alternatives, no measurable cumulative economic effects can be discerned from the proposed management changes. However, cumulative effects may depend on how and when changes are implemented and the broader social and economic conditions and trends at the time.

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